

GB 1460864
JAN 1977

GROUP. 3.51
CLASS. 285
RECORDED

ICATION

1460864

1 460 864

- (21) Application No. 11308/74 (22) Filed 14 March 1974
(23) Complete Specification filed 13 June 1975
(44) Complete Specification published 6 Jan. 1977
(51) INT CL⁷ F16L 19/00
(52) Index at acceptance F2G 25A 2B
(72) Inventors JACK BEACHAM and BRIAN BERNARD DEELEY

GREAT BRITAIN (19)
GROUP. 3.51
CLASS. 285
RECORDED



(54) IMPROVEMENTS IN PIPE UNIONS

(71) PANY LII
Delta Road
hereby dec
5 pray that a
the method
be particu
following s
This inve
10 providing
first and set
which the
more partic
comprising
15 flange and
member hi
adjacent to
being adap
with the fir
20 of the tub
member by
flanges of the
nut and the
tubular
member on
tightening of
the union
nut onto the
first member,
25 and a
further metallic
member secured
to the
other end of
the tubular
member and
adapted to
screw-threadedly
engage with
30 the second
screw-threaded
member, the
union nut being
held captive on
the tubular
member by the
flange on the
tubular
member and
said further
member which
has a
sufficiently
large transverse
dimension to
prevent
passage of the
union nut over
said
further member.
35 Unions of this
kind have been
used for
connecting gas
appliances
together, for
connecting a
meter service
governor to a
meter for
example.
40 It is known to
connect the
tubular member
to said further
member after
assembly of the
union nut onto
the tubular
member by
screwing and
brazing the
tubular member
to said further
member.
45 This is, however,
an expensive
operation,
requiring testing
of the seal
between the two
members, and
has a high
reject rate.
Moreover the
seal between the
two members
may be broken
when the union
is

SPEY

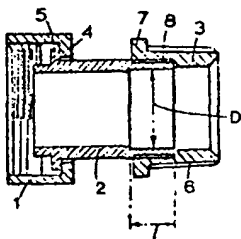
Q67

*A1007Y/01 *GB 1460-864

Mfg. pipe union for incompatible threaded members - by threading tubular member, fitting union nut, screwing end member on and deforming threaded joint

SPERRYN & CO LTD 14.03.74-GB-011308
(06.01.77) F16L-19

A pipe union for two incompatible threaded members is formed from a stamped union nut (1) held captive on a stamped and machined tubular member (2) secured to a forged member (3). The nut is tapped and the member (3) has an external tapered thread (6). The union is formed by first forming a thread on one end of the tubular member (2) and then passing the nut over this end. The member (3) is then screwed onto the tubular member and a ball plunger or roller burnishing tool inserted to expand the joint to bind the threads of the joint together to form a gas tight seal. 13.6.75 (4pp)



tion of the
50
method of
and set forth
end of the
ter member
threads, 55
the tubular
other end,
er to said
permanently
int between 60
aid further
radially.
the further
a drop of a
applied to 65
per at said
70
Usually the
further member
will be
formed with
an external
radially
extending
polygonal
flange for
engagement
by a
spanner
when the
further
member is
tightened
in use to
the second
member. It
is this
polygonal
flange which
would
prevent
assembly
of the union
nut onto the
tubular
member if
the tubular
member were
to be
made
integral
with the
further
member. 80
The tubular
member and
the further
member may
be made of
any suitable
metal but
preferably
they are
made of
brass.
The
expansion
of the joint
between the
tubular
member and
the further
member is
conveniently
performed
by cold
forming
with a ball
plunger or
roller
burnishing
tool. 85
The invention
will now be
further
described,
by way of
example only,
with
reference to
the
accompanying
drawing
which is an
axial cross
section of a
completed
brass union
adapted to
secure an
externally
screw-threaded
first member
to an
internally
screw-threaded
second
member to
provide fluid
communication
therebetween. 95

BEST AVAILABLE COPY

The union comprises a stamped union nut 1 held captive on a stamped and machined tubular member 2 secured to a further member 3 which is a forging.

- 5 The union nut 1 is internally screw-threaded for engagement with external screw threads on a first member, not shown, and is provided with an internal radial flange 4 for engagement with an external radial flange 5 which is an integral part of one end of the tubular member 2. When the union nut 1 is screwed in use onto the first member the tubular member 2 is drawn towards the first member by the engagement between the flanges 4 and 5.

- 15 The further member 3 is formed with an external tapered screw thread 6 for engagement with an internal co-operating screw thread of a second member, not shown, and is provided with an integral polygonal radial flange 7 for engagement by a spanner during tightening in use of the further member 7 to the second member.

- 20 Initially the other end 8 of the tubular member 3 comprises a plain sleeve. Prior to assembly of the union nut 1 onto the sleeve the exterior of said other end 8 is formed with a plain external screw thread for engagement with a complementary screw thread formed internally of the further member 3. The union nut is then assembled onto the tubular member 2 by passing it over said other end 8 of the tubular member. The tubular member and the further member are then screwed together and a ball plunger or roller burnishing tool is inserted into the joint between the members by passing it through the further member 3, and the joint between the members is expanded radially over the distance A by cold forming to increase the internal diameter D of the joint and to bind the screw threads of the joint together to form a gas-tight seal between the tubular member 2 and the further member 3.

- 45 In one example the initial diameter D is 0.875 inches and a plunging tool of 0.925" diameter is used. The diameter D is thus increased by slightly more than 4% of its initial value.

- 50 In order to increase the break-loose torque of the joint between the members 2 and 3 a drop of a screw-thread locking material such as that sold under the Registered Trade Mark 'LOCTITE' STÜDLOCK (OR GRADE 75) is applied to the middle part of one of the screw threads before the members 2 and 3 are screwed together.

WHAT WE CLAIM IS:—

1. A method of manufacturing a pipe union of the kind set forth comprising forming said other end of the tubular member and said further member with complementary screw threads, assembling the union nut onto the tubular member by passing it over said other end of the tubular members, screwing said tubular member to said further member, and then permanently deforming the screw-threaded joint between said tubular member and said further member by expanding the joint radially.
2. The method according to claim 1 in which the tubular member is formed with its screw thread prior to assembling the union nut onto the tubular member.
3. The method according to claim 1 or claim 2 in which prior to screwing the tubular member to said further member screw-thread locking material is applied to at least one of the co-operating screw threads.
4. The method according to any of the preceding claims in which the co-operating screw threads comprise an external screw thread formed on the tubular member and an internal screw thread formed on said further member.
5. The method according to any of the preceding claims in which the expansion of the joint is performed by cold forming.
6. The method according to claim 5 in which the joint between the tubular member is expanded by insertion of a ball plunger.
7. The method according to claim 5 in which the joint between the tubular member is expanded by a roller burnishing tool.
8. The method according to any of the preceding claims in which the tubular member and said further member are of brass.
9. The method according to any of the preceding claims in which the internal diameter of the joint between the tubular member and said further member is increased by more than four per cent of the initial diameter.
10. The method according to claim 1 and substantially as described with reference to the accompanying drawing.
11. A pipe union of the kind set forth produced by the method according to any of the preceding claims.
12. A pipe union of the kind set forth manufactured according to the method of claim 10 and substantially as described with reference to the accompanying drawing.

The union comprises a stamped union nut 1 held captive on a stamped and machined tubular member 2 secured to a further member 3 which is a forging.

5 The union nut 1 is internally screw-threaded for engagement with external screw threads on a first member, not shown, and is provided with an internal radial flange 4 for engagement with an external radial
10 flange 5 which is an integral part of one end of the tubular member 2. When the union nut 1 is screwed in use onto the first member the tubular member 2 is drawn towards the first member by the engagement between the flanges 4 and 5.

15 The further member 3 is formed with an external tapered screw thread 6 for engagement with an internal co-operating screw thread of a second member, not shown, and is provided with an integral
20 polygonal radial flange 7 for engagement by a spanner during tightening in use of the further member 7 to the second member.

25 Initially the other end 8 of the tubular member 3 comprises a plain sleeve. Prior to assembly of the union nut 1 onto the sleeve the exterior of said other end 8 is formed with a plain external screw thread for engagement with a complementary screw
30 thread formed internally of the further member 3. The union nut is then assembled onto the tubular member 2 by passing it over said other end 8 of the tubular member. The tubular member and the further member are
35 then screwed together and a ball plunger or roller burnishing tool is inserted into the joint between the members by passing it through the further member 3, and the joint between the members is expanded radially
40 over the distance A by cold forming to increase the internal diameter D of the joint and to bind the screw threads of the joint together to form a gas-tight seal between the tubular member 2 and the further member
45 3.

50 In one example the initial diameter D is 0.875 inches and a plunging tool of 0.925 inch diameter is used. The diameter D is thus increased by slightly more than 4% of its initial value.

55 In order to increase the break-loose torque of the joint between the members 2 and 3 a drop of a screw-thread locking material such as that sold under the Registered Trade Mark 'LOCTITE' STULOCK (OR GRADE 75) is applied to the middle part of one of the screw threads before the members 2 and 3 are screwed together.

WHAT WE CLAIM IS:—

60 1. A method of manufacturing a pipe union of the kind set forth comprising forming said other end of the tubular member and said further member with complementary screw threads, assembling
65 the union nut onto the tubular member by passing it over said other end of the tubular members, screwing said tubular member to said further member, and then permanently deforming
70 the screw-threaded joint between said tubular member and said further member by expanding the joint radially.

75 2. The method according to claim 1 in which the tubular member is formed with its screw thread prior to assembling the union nut onto the tubular member.

80 3. The method according to claim 1 or claim 2 in which prior to screwing the tubular member to said further member screw-thread locking material is applied to at least one of the co-operating screw threads.

85 4. The method according to any of the preceding claims in which the co-operating screw threads comprise an external screw thread formed on the tubular member and an internal screw thread formed on said
90 further member.

95 5. The method according to any of the preceding claims in which the expansion of the joint is performed by cold forming.

100 6. The method according to claim 5 in which the joint between the tubular member is expanded by insertion of a ball plunger.

105 7. The method according to claim 5 in which the joint between the tubular member is expanded by a roller burnishing tool.

110 8. The method according to any of the preceding claims in which the tubular member and said further member are of brass.

115 9. The method according to any of the preceding claims in which the internal diameter of the joint between the tubular member and said further member is increased by more than four per cent of the initial diameter.

120 10. The method according to claim 1 and substantially as described with reference to the accompanying drawing.

125 11. A pipe union of the kind set forth produced by the method according to any of the preceding claims.

130 12. A pipe union of the kind set forth manufactured according to the method of claim 10 and substantially as described with reference to the accompanying drawing.

BARKER, BRETTELL & DUNCAN
Chartered Patent Agents
Agents for the Applicants
138 Hagley Road
Edgbaston
Birmingham B16 9PW.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1977.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.

BEST AVAILABLE COPY